DOCUMENT RESUME

ED 468 332 EA 031 884

AUTHOR	Heise, Michael; Nechyba, Thomas
TITLE	School Finance Reform: A Case for Vouchers. Civic Report.
INSTITUTION	Manhattan Inst., New York, NY. Center for Civic Innovation.
REPORT NO	CCI-R-9
PUB DATE	1999-10-00
NOTE	28p.
AVAILABLE FROM	Manhattan Institute for Policy Research, 52 Vanderbilt Avenue, New York, NY 10017. Tel: 212-599-7000; Fax: 212-599-3494; Web site: http://www.manhattan-institute.org. For full text: http://www.manhattan-institute.org/html/cr_9.htm.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	*Educational Finance; *Educational Vouchers; Elementary Secondary Education; *Finance Reform; *Financial Support; Parent Participation; Private Schools; Public Schools; *Public Support; *School Choice
IDENTIFIERS	*New York (New York)

ABSTRACT

Efforts in school-finance reform in recent years have been directed by court-mandated remedies for equity and adequacy. This report contends that the typical judicial remedy overlooks the fundamental causes of inequities in public education, and the potential for reform through expansion of parental choice. It combines existing data with insights from economic models to simulate how factors that govern public-school choices might influence parental decisions in light of options created by private-school vouchers. The methodology takes the current public-school system as the starting point of an analysis of vouchers. It explores how inequities may form the legal basis for judicial remedies to include private-school vouchers, and the forces that underlie these inequities. It then creates a model that incorporates these forces, relates them to data from New York City schools, and explores the impact of vouchers in their presence. The model predicts that voucher programs substantially reduce the segregation of educational opportunity. The model further suggests that community-targeted voucher initiatives in a system like New York's have the potential for large positive effects on equity and efficiency of the entire education system. (Contains 2 tables; 69 endnotes, some with references.) (WFA)

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ED 468 332

Civic Report

No. 9 October 1999

School Finance Reform: A Case for Vouchers

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1. Introduction

The number and intensity of school finance reform efforts have grown steadily over the past decades and have been fueled by increasing frustration with the political processes and a growing unease with real and perceived inequities in public school quality. Much of the direction for these reforms is provided in court mandated remedies that arise from equity and adequacy based school finance lawsuits, a trend that suggests a general belief in the courts' abilities to deliver or at least stimulate desired education reforms.[1] We argue in this paper, however, that the typical judicial remedy advanced by courts in school-finance litigation cases overlooks the fundamental causes for current inequities in public education. Therefore, it misses an important option for potential reform that aims to achieve the courts' objectives through the expansion of parental choice.

Most judicial remedies in successful challenges to public school finance systems seek to make schools more equal or adequate by directing increased educational spending to under-performing school districts.[2] This remedy brings with it an array of practical and legal problems. First, courts are perceived as seemingly "rewarding" under-performing schools and may therefore unintentionally create perverse incentives for public school bureaucracies and generate a serious threat to the much-needed political support for public education. Second, courts face a difficult problem regarding the timing of reforms relative to the immediate need for action on behalf of plaintiffs. Specifically, during the period of time in which a constitutionally inadequate school endeavors to improve, it remains unclear how increased educational spending directed toward such a school offers adequate relief to its current students. Finally, despite sustained, nationwide school finance litigation and a clear overall trend of steadily increasing educational spending, many of the problems that school finance litigation seeks to solve persist. Simply put, the remedy might not work, at least as it relates to the desired educational outcomes, and we argue in this paper that clear reasons exist why this might be the case. In particular, the usual court remedy ignores much of the scholarly evidence suggesting that spending plays only a minor role in producing good schools, and does not sufficiently take into account the broader forces that have caused current inequities in public education to arise in the first place. The gravity of enduring (and sometimes worsening) problems calls for fresh and creative thinking about alternative legal remedies.

One viable but relatively unexplored legal remedy to constitutionally inadequate school finance systems is to target any additional funding to the parents of schoolchildren assigned to under-performing schools rather than to the public schools or school systems that have failed to deliver adequate educational services. Eligible schoolchildren, through their parents, could redeem such vouchers at any eligible public or private, religious or secular schools. In this way the legal remedy — increased access to more desirable schools — might more precisely calibrate with the legal harm — constitutionally inadequate educational services provided by poorly performing public school districts — without undermining public support for education. Furthermore, we argue that such a choice-based remedy may get to the root of the fundamental forces that have given rise to public school quality differences.

The potential for this kind of reform as a remedy in school finance court decisions in general, and in New York in particular, stems from two recent developments. First, lawsuits challenging public school systems, such as New York's, have shifted from emphasizing equality in per-pupil spending across schools to focusing on a state's constitutional obligation to ensure access to adequate educational opportunities for all children. Thus, to the extent that any given

legal remedy could address concerns over the adequacy of educational opportunities, such a remedy warrants consideration. Second, a growing body of literature suggests that 30 years of state efforts (across the US) to equalize per-pupil spending levels have generally not led to an expansion of adequate educational opportunities, particularly for children in poor districts. Thus, it seems natural that courts ought to look toward new and innovative policy proposals to address their adequacy criteria. We argue that vouchers may represent such a proposal.

So far, scarcity of data has precluded a meaningful consideration of the effects that a relatively large-scale publicly-funded school voucher program might generate.[3] This represents a considerable challenge for policy makers who disagree widely in what they consider to be important in education reforms. Even among those who voice such disagreements,[4] however, consensus exists on at least some points. For example, despite limited experience with private school competition in the US (and New York),[5] parents do retain and exercise some choice under the current system. Families for whom private schools are not an option routinely choose between public schools through their choice of residence, and the data suggest that parental perceptions of public school quality is among the most important determinants of residential location. Parents' willingness to pay for schools can thus be observed both directly through the choices they make as well as indirectly through property values that reflect local public school quality.[6] Consequently, it is possible to combine existing data with insights from economic models to simulate how the same factors that currently govern public school district choices might influence parental decisions in light of new options created through private school vouchers.

Below we outline a specific methodology that attempts to accomplish this. Apart from the issue of whether public schools operate efficiently and whether competition can raise overall public school productivity, such an approach must begin with a setting that recognizes existing equity problems. Put differently, the public school sector cannot be thought of as one entity that treats all children equally, but rather of consisting of many different schools and school districts with wide variations in school quality. Therefore, a crucial distinction between our methodology and that found more commonly in the economics literature is that we explicitly take the current public school system — with all of its equity problems — as the starting point of our analysis of vouchers. Our approach will therefore begin by incorporating the forces that give rise to current inequalities across school districts and then demonstrate that the mere inclusion of such forces tends to overcome the generally negative equity implications found for vouchers in the current literature.[7] Furthermore, a consideration of additional forces for which we have at least some empirical evidence suggests quite favorable equity and efficiency consequences from voucher initiatives, the very consequences school finance court decisions seek.

Section 2 begins by exploring how the well-documented inequities across public schools may form the legal basis for judicial remedies to include private school vouchers. The argument that is advanced, however, rests on some important assumptions regarding the empirical effect of introducing vouchers into a public school system plagued by inequalities and inadequacies, and it therefore presupposes a clear understanding of the economic forces that underlie these inequalities. Section 3 explores these forces and points out that courts possess neither the means nor the authority to alter these directly in any significant way. Therefore, court decisions must come to terms with these economic forces and consider them when crafting remedies. Section 4 then outlines a general methodology that incorporates these important forces, relates them to data from New York City, and explores the impact of vouchers in their presence. Finally, Section 5 expands the framework to incorporate other features that are likely to play an important role in voucher policies but that we leave out of the base model constructed in Section 4.

2. Constitutional Implications of Public School Inequities

For decades education reformers have challenged the constitutionality of school finance systems on both equity and, more recently, adequacy grounds. Equity-based lawsuits focused on per-pupil spending disparities. In contrast, more recent adequacy lawsuits focus on whether schools or school districts meet constitutionally mandated education thresholds regardless of educational spending levels or per-pupil disparities. More precisely, commentators note three distinct "waves" of school finance court decisions.[8] The first wave of court decisions focusing on the U.S. Constitution's Equal Protection Clause began with the 1971 *Serrano v. Priest*[9] decision and ended three years later with the U.S. Supreme Court's *San Antonio Independent School District v. Rodriguez*[10] decision. The New Jersey court's *Robinson v. Cahill*[11] decision in 1973 marked the emergence of the second wave of school finance court decisions that ended in 1989. Like its predecessor, a focus on equity and a corollary desire to reduce per-pupil spending disparities characterized the second wave. However, in sharp contrast to the first wave, the second wave turned away from the federal constitution and toward state constitutions. The third and current wave of court decisions began in 1989 and signaled a subtle, yet dramatic, shift in school finance litigation theory and strategy. Current court decisions replace a traditional focus on equity with adequacy, or the sufficiency of funds allocated to students and schools.[12] Despite this dramatic shift in school finance litigation theory, the nature of judicial remedies awarded by courts where challenges to school finance systems prevail has remained largely unchanged. For the most part, courts have retained their traditional preoccupation with either equalizing or increasing educational spending, or both.

As we discuss below, New York's school finance litigation experience reflects national trends. While New York judges grappled with school finance lawsuits, New York policy makers experimented with a few school choice reforms, funded both publicly and privately. To better understand how New York might merge its judicial emphasis on school finance with its pioneering school choice reforms, a brief history of both these movements is in order. Section 2.1 provides an overview of the constitutional issues surrounding public school finance in New York and elsewhere, while Section 2.2 briefly reviews New York's experience with school choice and voucher programs. Section 2.3 then argues that the introduction of vouchers into court remedies may be consistent with evolving judicial principles governing school finance decisions if it can be demonstrated that they are likely to raise educational opportunities and social value.

2.1. A Constitutional Overview of Public Schooling in New York

New York's educational system resembles those found in other states, with the notable exceptions of Hawaii and Michigan (and the District of Columbia).[13] Although the state retains the ultimate responsibility to discharge its constitutional duty to educate, it delegates much of this authority to local school districts. Outside New York City, local school districts have the power to tax mainly through property taxes. Variations in educational spending between New York's public school districts pivot largely on variations in local property values and, to a lesser extent, nominal tax-rate differentials. In New York City, however, the Board of Education is another line on the municipal budget, and an additional political process governs resource allocations.[14] In addition, substantial state subsidies generate a state education budget that recently surpassed eight billion dollars.[15]

New York's education clause[16] originated with the state's 1894 constitutional convention, and its substance has remained unchanged for more than 100 years. As state education clauses go, it is remarkably unremarkable, often ranking in the third or fourth tier in what it compels the state to provide.[17] Nevertheless, its precise meaning has been the subject of fierce litigation for more than two decades. Frustrated with legislative inability to address educational spending disparities among school districts, New York school reformers turned to the courts in 1974 to see if they could achieve judicially what they had not achieved legislatively. In *Levittown v. Nyquist*,[18] 27 school districts, boards of education of four of New York's five largest cities (including New York City), and various student and parent groups joined a legal challenge to the state's school finance system rooted in an equity theory. The plaintiffs argued that per-pupil spending variations violated state and federal constitutional guarantees. The trial court, after 277 days, 23,000 pages of testimony, 400 exhibits, and 180 witnesses,[19] agreed with the plaintiffs' claim and held that the state's school finance system violated not only the state's education clause but also the state and federal equal protection clauses. An appellate court concurred, except as to the claim involving the federal equal protection clause. However, in a 6-1 decision, New York's highest court essentially reversed the lower courts by declaring New York's school finance system constitutional.[20] Although acknowledging per-pupil spending discrepancies, the court concluded that such discrepancies alone did not rise to a constitutional violation. The New York court held open, however, the possibility of a constitutional violation if "gross and glaring" inadequacy could be shown.[21] A subsequent lawsuit, *Reform Educational Financing Inequities Today v. Cuomo*,[22] resurrected the equity-based theory that failed in the earlier *Levittown* litigation. The *REFIT* case closely resembled *Levittown*, with the magnitude of the inter-district per-pupil spending discrepancies as the salient distinguishing factor. Despite ever increasing per-pupil spending discrepancies, however, the New York court again rejected the equity-based challenge.[23]

Concurrent with the *REFIT* litigation, a separate lawsuit, *Campaign for Fiscal Equity v. State of New York*,[24] was brought by New York City school districts and advanced an adequacy theory. Where equity-based school finance lawsuits focus on per-pupil spending gaps, adequacy-based lawsuits, such as *Campaign for Fiscal Equity*, focus instead on whether school districts succeed in providing a minimally acceptable education. Thus, the districts alleged that the educational services provided, at least within New York City, fall below constitutional minimum standards regardless of how much funding the districts receive.[25] While the case has thus far reached New York's highest court only on a procedural motion, two themes seem to have emerged. Judges appear to recognize a constitutional floor with respect to educational adequacy as well as a corresponding duty for the state to ensure that this floor is not breached. However, the precise nature and extent of this duty, and the degree to which this differs from merely ensuring minimal funding levels, remains unclear.

2.2. School Choice in New York

Concurrent with, yet independent of, these judicial battles over school finance reform, New York policy makers experimented with some of the nation's largest public and private school choice programs. East Harlem's District 4 implemented a public choice program as early as 1974, and the New York City Board of Education implemented a citywide public choice program (unfortunately hindered by substantial waiting lists for desirable public schools) in 1991.[26] Furthermore, the state is home to some of the nation's largest and oldest private voucher programs, including the Student-Sponsor Partnership Program founded in New York City in 1986.[27] The School Choice Scholarship Program includes more than 2,500 students from the

City's 14 lowest performing public schools. The state is also home to numerous smaller programs, such as Operation Exodus and Hope Through Education. [28] Despite these programs' successes, proposals to further expand school choice have failed politically.[29] Consequently, policy makers have recently begun thinking creatively about ways to link school finance and voucher reform programs.

2.3. Merging School Finance and Choice Reforms

As we suggested in the Introduction, three problems limit the traditional judicial remedy that directs or induces increased educational spending to constitutionally inadequate schools in adequacy-based school finance court decisions. First, the remedy might not work. That is, for reasons discussed in Section 3, it remains highly unlikely that further educational spending increases will translate into increases either in educational adequacy or in equality of educational opportunity. Second, the remedy appears to "reward" failing schools — thereby establishing perverse incentives. This may further reduce precious political support for public education. Third, even among those who argue traditional judicial remedies work, few argue persuasively that they work quickly. Thus, even if one assumes increased educational spending will make constitutionally adequate schools, such legal relief from a constitutional harm will elude those students assigned to inadequate schools for a long time.

Given the adequacy standard that emerges from recent school finance court decisions, we suggest that district-targeted vouchers constitute a viable court remedy in cases where plaintiffs demonstrate inadequate public educational opportunities and courts mandate increased educational spending. From one perspective, our proposed judicial remedy represents a small departure from the typical judicial remedy that endeavors to direct increased educational spending to the very schools and districts that failed to perform in a constitutionally acceptable manner. Our proposed remedy alters only the recipient of additional educational resources arising from a judicial remedy.

From a different perspective, however, by directing increased educational funds to eligible students rather than to under-performing schools, a judicial remedy that includes district-targeted education vouchers can alter the nature and structure of the relation between schools, students and their families in a fundamental manner. Moreover, such a remedy would be limited to those students whose constitutional rights were infringed by inadequate public schools. Finally, a judicial remedy that links increased educational spending to a voucher program would more closely align the judicial remedy and the constitutional violation. Vouchers provide more immediate relief to aggrieved students than remedies that seek to improve inadequate schools over time by increasing resources. As a judicial remedy to successful adequacy lawsuits, vouchers would de-couple the immediate fate of students from under-performing schools. During the period of time it takes a school or a district to begin performing at a constitutionally acceptable level, students would have access to schools already performing at such a level.

It should also be noted that linking school choice policies to judicial remedies in school finance cases advances evolving notions of equal educational opportunity. While past public and scholarly discussions on equal educational opportunity (as opposed to equal educational spending) have generally revolved around issues of race, recent discussions have focused on broader concerns about school standards, accountability, assessments, and student academic achievement.[30] School finance reformers have discovered that under-performing, ineffective, or (state) constitutionally inadequate schools can never deliver equal educational opportunity,

at least in any meaningful sense.[31] Concurrently, education reformers advancing school choice policies seek to reduce barriers to better schools for more families. Thus, a policy that links school finance and choice programs might advance both sets of objectives simultaneously.

2.4. Underlying Assumptions of the Legal Case for Vouchers

Our argument differs from previous rationales for school choice[32] and rests on three basic assumptions:

(1) Judicial decisions are an acceptable vehicle to implement such a policy;
(2) School choice can advance the broader goal of increasing equal educational opportunity; and
(3) School choice can generate net social value, at least in the form of improved school quality.

The first of these assumptions is a matter of some controversy. While the courts' role in promoting equal educational opportunity enjoys a proud heritage (dating back to *Brown v. Board of Education*), an array of institutional, structural, and policy reasons certainly recommend that courts inclined to venture into such policy making areas do so with extreme caution.[33] Insofar as courts continue to engage in legal efforts to change education policies, a broad range of policies ought to be considered. There exists no *a priori* reason as to why vouchers should be excluded from such consideration if their impact can be demonstrated to meet the criteria judged important by the courts.

To the extent that courts actively engage in educational policy, our second and third assumptions then become crucial for the question as to whether vouchers may constitute a possible court remedy in legal challenges to the status quo. Put differently, once court involvement in these matters is taken as a given, we must ask to what extent vouchers would actually advance the broader goal of increasing equal educational opportunity ("equity" and "adequacy") and generating net social value ("efficiency"). Previous attempts to answer this question have generally focused on a framework that gives rise to two arguments: first, vouchers tend to hurt public schools as the best students are likely to leave for private schools that select students on the basis of abilities. Second, the presence of competition from private schools improves public schools by causing them to become more efficient. Thus, in the absence of substantial efficiency gains from increased competition, current inequities in education would increase substantially as a result of vouchers as public schools deteriorate and private schools become elite institutions that attract only the best of the current public school population.

While this framework has yielded valuable insights, we think it is fundamentally flawed in assisting courts because it treats public schooling as a single homogeneous sector and does not adequately acknowledge the very inequities within public education that prompt judicial involvement in the first place. Given that the framework assumes complete equality within public schools prior to vouchers, the introduction of vouchers in the absence of competitive effects therefore *must* entail deviations of this perfect but hypothetical equity. We thus begin in the next section by exploring the economic causes for present inequities and then proceed in Sections 4 and 5 to derive a framework that explicitly incorporates these into the standard analysis. This allows us to analyze the impact of vouchers in a framework that begins with the types of significant inequities within public education that we observe in places like New York.

3. The Economic Roots of Inequities in Public School Quality

Studies show that inter-district disparities in the provision of public services and of quality public education in particular can be traced to a combination of four factors. These factors are: a pronounced role for local funding and/or local politics, differences in household income and wealth, the willingness of people to move to school districts that best meet their needs, and the abilities of communities to exclude fiscally undesirable residents through policies like zoning. Together, these factors enable parents to fund and control public schools and they provide incentives for higher income households, who desire greater school spending and perhaps different types of schools, to segregate into separate districts. These factors also allow inter-district differences in school quality to persist as higher housing costs prevent people who live in low quality districts from moving to higher quality ones.[34]

When school districts in New York and in other states are ranked based on average income and wealth, wealthier areas tend to spend more per-pupil on public schools and usually include fewer neighborhoods where lower income households can afford to settle. Wealthier districts also have more financial resources or fiscal capacity for schools because a greater portion of school funds are raised through property taxes, or because the local political process in large districts like New York City is inclined to channel more funds to schools serving wealthier populations.

Even when per-pupil spending is equalized across districts, as in California, inter-district differences persist, providing evidence, confirmed elsewhere in the literature, that educational quality depends not only on financial resources but also on institutional factors and interactions among parents, teachers, and children.[35] Keeping the institutional structures constant (the curricula, the degrees of competition, and unionization of teachers), families impact school quality by providing valuable information to schools, monitoring their performance, and influencing child abilities that affect the learning of other children in the classroom. Educators often speak of "peer effects," the positive or negative impact families have on school quality.[36] Given strong evidence that parents from higher income households monitor their schools more,[37] and given somewhat weaker evidence that their children have greater average abilities,[38] it is not surprising that public school quality correlates highly with district wealth — even after financial resources in schools are equalized. This correlation strengthens the incentive for higher income households to segregate into separate districts.[39]

Wealthier areas therefore enjoy both higher fiscal capacity (due to their larger tax bases and greater political power) and lower fiscal need (due to the better school environments that parents and students create).[40] Note that each of the four factors described at the beginning of this section is important for the preservation of these outcomes. In other words, inter-district differences in public school quality will persist as long as household incomes differ, people are willing to move for better schools, low income housing in high quality districts is scarce, and there is some degree of local funding. Courts cannot readily alter local political relationships, eliminate income differences, interfere with the freedom to move, or change the quality of housing in neighborhoods and urban districts (like those in New York). Consequently, they are unlikely to be able to "solve" inequities in public education by attacking the central economic forces that give rise to them.[41] Judges seeking to address inequities in schooling must recognize how these economic realities limit the effectiveness of traditional remedies and structure new ones accordingly.

In Section 4, we describe a framework for analyzing different types of policies in the presence of these forces. Our base model contains most of the standard assumptions of previous economic models, but uniquely includes data on the forces that have contributed to disparities in the quality of public education. We note at the outset that the economic assumptions we adopt from previous models are likely to strongly bias results against finding positive equity or efficiency implications for vouchers. It is therefore somewhat surprising that accounting for these forces, our base model yields results that are quite neutral for both efficiency and equity — results starkly different from those cited in the literature which does not explicitly model the causes of current inequities. In Section 5, we then try to incorporate more plausible assumptions regarding the efficiency impact of competition, and we find larger potential for favorable equity and efficiency outcomes from vouchers.

4. Constructing a Model of the Underlying Economic Realities

Given our focus on court remedies for correcting inequalities within the public school sector, we begin our analysis by constructing a base model that takes into account the role of mobility, politics, household income differences, and housing markets. It attempts to include the four forces previously identified as generating the inter-district public school inequalities we currently observe while maintaining all other assumptions made in previous economic models. This approach is outlined in Section 4.1 and is, we think, an appropriate starting point for analyzing vouchers. This starting point, however, incorporates none of the potentially positive forces cited by voucher proponents and, accordingly, reflects a "worst case scenario" with respect to the efficacy of vouchers.

4.1. The Base Model[42]

We turn to a mathematical model capable of simulating how different types of voucher programs, implemented in New York City, under differing state and local education policies, would affect the distribution of families by income, other socioeconomic variables, and parents' perceptions of public school quality. Our model assumes that parents continue to make choices about housing location and which schools their children attend in ways consistent with their current behavior.

The model uses the five building blocks listed below to calculate family distribution and school quality perception data:

(1) Three "representative" school districts that differ in overall housing, each containing neighborhoods with different amenities and housing qualities;
(2) Families who differ in socioeconomic status, have children whose ability levels vary, and who choose where to live, where to send their children to school, and how to vote on local school funding issues;[43]
(3) School financing systems that combine local property and state income taxes;[44]
(4) Public schools where perceived quality depends on per-pupil spending, the socioeconomic status of parents, and the abilities of schoolchildren that are consistent with household choices and property values;[45] and
(5) The potential for private schools to emerge if parents can be persuaded to leave public schools.

To avoid skewing the model toward finding benefits from vouchers, we are consistent with the current literature and assume that private schools can set tuition rates and admission standards choosing only to accept "good students."

We include all factors previously mentioned as important to understanding current public school inequities in the framework. The first building block incorporates housing markets that might exclude lower income families from high-income school districts and the second acknowledges socioeconomic differences and the reality of family mobility. The third allows for some degree of local political control. The model recognizes, as have previous economic models, that educational quality, while influenced by financial resources, is also dependent on factors like those listed in the fourth block.

Using parental behavior data, we calibrate the model to assess how parents will adjust their residential and schooling choices, as well as their willingness to increase public school funding, once vouchers have changed the relationship between residence and school enrollment. First, we divide New York City school districts into high, middle and low-income categories. We group these to arrive at three "representative" districts.[46] Using data on housing prices, we then divide each representative district into neighborhoods of differing quality. As noted more clearly below, the practice of using house prices to accomplish this implicitly allows us to incorporate neighborhood factors such as crime rates, parental perceptions of schools, environmental quality, and public amenities — all important in determining local housing prices.

After replicating the distribution of families by income, the model then notes where families of different socioeconomic status choose to live, how they vote on school spending issues,[47] and infers how much they value neighborhood characteristics and the non-financial attributes of their schools, in particular, the socioeconomic mix of parents and children. We use estimates of coefficients between parental incomes and child abilities to construct child ability measures that correlate with the socioeconomic status of families.[48] Finally, we replicate low-, middle-, and high- income district local and state financing levels for New York.[49] Through this methodology, we match population distributions in New York with property values, school-spending levels, and taxes.[50]

The result is a model that shows how parental choices give rise to housing and education patterns. As emphasized earlier, the strength of this model is that it enables us to analyze the impact of vouchers based on the inequalities inherent in the public school system -- rather than taking as its starting point an idealized setting where all public schools are the same.

4.11. Important Caveats to the Base Model

Before considering the results of our policy simulations, we digress briefly to clarify two possible misconceptions that might arise from our discussion. First, some readers might receive the impression that we assume that higher income parents "care more" about the education of their children than lower income parents. This is inconsistent with the empirical evidence,[51] and is not the case in our model. We assume that all families have the same preferences for education and other goods, but their demand for education spending varies with their differing incomes, just as their demand for spending on other goods varies. On the other hand, our model is consistent with the empirical evidence in that it incorporates a weak correlation, 0.4, of family income and child abilities, and the simulation results we report do assume, again consistent with the empirical evidence, that higher income parents monitor schools more. We

have demonstrated elsewhere, in a slightly different context, that the results in the simulations are not sensitive to these precise assumptions.[52]

Second, we do not assume that families care only about house prices and school quality when they choose where to live or that the housing market excludes renters. Since we use actual housing prices to calibrate neighborhood qualities in our representative school districts, we are implicitly including amenities and housing characteristics in the model. Factors like local crime rates, noise levels, and proximity to job centers are all captured, together with perceptions of school quality. We therefore assume that families are cognizant of them, in ways consistent with the data, when choosing where to live. Furthermore, house values are treated as annualized flows of housing services that closely resemble rental values. When we include renters, none of the primary results changes significantly.

4.2 Voucher Policy Simulations with the Base Model

Using our model, we simulate the effects of three different types of private school voucher initiatives. Each is financed by state income taxes and can be used at private schools. The initiatives differ only in terms of who is eligible to use them. A full voucher can be used by anyone; a community- or district-targeted voucher can be used only by residents in a particular community or school district; and an income-targeted voucher can only be used by families whose incomes fall below a specific level. We focus solely on private school choice because, as suggested earlier, public school choice is often rendered ineffective by capacity constraints in the best schools.

Of the three types of voucher proposals, the one that conforms most closely in spirit with the court remedy proposed in Section 2 is the community- or district-targeted voucher that applies to all families whose public school is deemed inadequate. For this reason, we focus on this type of voucher in the numerical estimates we report in Tables 1 and 2, although we note that our simulations for full voucher programs produce almost identical effects at low voucher values. We report data from simulations for $2,500 and $5,000 community- or district-targeted vouchers in each table, with the data for $5,000 vouchers listed in brackets and italics. Given that most experiments have been based on voucher amounts at lower levels, our discussion focuses primarily on results from the $2,500 voucher simulation. We report the $5,000 voucher results for the sake of completeness and to illustrate what happens at higher voucher values.

The data from these simulations show that vouchers, by de-coupling families' residential location choices from their school choices, can cause major changes in both, assuming that people are willing to move. Since a significant number of metropolitan American families do move in any given year, this assumption does not seem restrictive.[53]

4.21. Migration, Residential Segregation and Private Schools

The first two columns of Tables 1 and 2 (Table 1 is on page 11, Table 2 is on page 13) provide a comparison of some basic statistics from our simulations of introducing community-targeted $2,500 and $5,000 voucher programs into the current voucher-free environment. Data for the current system are presented in column 1, and the simulation results are presented in column 2. Column 2 of Table 1 shows that our simulation predicts that the $2,500 voucher will cause approximately 14 percent of children to switch from public to private schools. Average

TABLE 1

School Averages Under Different Assumptions

First Line - $2,500 Full or Community Targeted Voucher

[Second Line - $5,000 Community Targeted Voucher]

	Calibrated Base Model (4.2)		Curriculum Targeting (5.1)		Competition & Bureaucracy (5.2)		Info/ Monitor (5.3)
	No Voucher	Base Model	Private Schools	All Schools	W/in Dist.	W/in & Across Dist.	Parental Input
% Switch to Priv. Sch.	—	14.2 *[26.3]*	18.9 *[33.3]*	13.8 *[23.1]*	13.1 *[22.2]*	10.5 *[16.4]*	15.5 *[22.9]*
Pub. School Means							
Per Pupil ($)	8,103	8,021 *[8,010]*	8,011 *[8,120]*	8,067 *[8,078]*	8,051 *[8,055]*	8,098 *[8,039]*	8,002 *[8,012]*
Household Income ($)	34,321	29,723 *[33,010]*	28,948 *[34,121]*	29,735 *[32,786]*	29,892 *[32,656]*	30,871 *[31,397]*	29,647 *[33,745]*
Child Ability*	6.20	5.86 *[5.32]*	5.74 *[5.11]*	5.89 *[5.43]*	5.91 *[5.46]*	6.01 *[5.72]*	5.76 *[5.48]*
School Quality**	7.83	7.55 *[7.29]*	7.41 *[7.20]*	8.01 *[8.43]*	7.88 *[7.90]*	8.11 *[8.76]*	7.71 *[7.72]*
*Across all Students****							
Per Pupil ($)	8,103	7,822 *[8,168]*	7,901 *[8,261]*	7,872 *[8,201]*	7,891 *[8,211]*	7,932 *[8,095]*	7,864 *[8,232]*
Household Income ($)	34,321	34,321 *[34,321]*	34,321 *[34,321]*	34,321 *[34,321]*	34,321 *[34,321]*	34,321 *[34,321]*	34,321 *[34,321]*
Child Ability*	6.20	6.20 *[6.20]*	6.20 *[6.20]*	6.20 *[6.20]*	6.20 *[6.20]*	6.20 *[6.20]*	6.20 *[6.20]*
School Quality**	7.83	7.84 *[7.89]*	8.17 *[8.32]*	8.42 *[8.89]*	8.02 *[8.14]*	8.39 *[9.07]*	8.36 *[8.57]*

* The child ability levels are arbitrarily calibrated to lie between one and 10.

** School quality arises endogenously from the combination of per pupil spending, per pupil household income, and average child ability in the school. For purposes of this calculation, all values are scaled to lie between zero and 10. While there is thus no natural interpretation for the magnitude of a particular school quality level, we emphasize here the direction and magnitude of change in the variable as we move across the table.

*** Note that "all students" refers to all students that are initially in the public school system before the introduction of vouchers. Therefore, the values in the first column are identical to those for public schools.

public school spending, determined through a political process of majority rule, will decline slightly, as will average family incomes, child ability levels, and, as perceived by parents, public school quality among those families who continue to choose public schools. Measured across all students, average per-pupil spending still decreases since private schools spend slightly less than public schools, but overall perceptions of school quality remain relatively unchanged.

The model predicts that voucher programs substantially reduce the segregation of educational opportunity that the current public education system encourages. This is a very important finding for those concerned about educational equity, particularly those involved in school adequacy litigation.

The current system effectively ties school attendance to residence and allows for significant local funding of education from property taxes. This creates incentives for middle- and upper-income families to segregate by income so they can capture the perceived benefits of high per-pupil spending for their children. Since these parents are also more likely to monitor their schools and be involved in their children's education, the current system grants greater educational opportunity to middle- and upper-income families than to poor ones.

Table 2 shows that the introduction of vouchers — even at the low $2,500 level — breaks these patterns and creates more uniform distributions of the factors that parents believe contribute to high quality public schools. The first part of the table shows that variances in family incomes, child abilities, and perceptions of school quality among parents whose children remain enrolled in public schools are dramatically lessened. Variances in family incomes and property values across school districts also decline substantially. Even when we include students leaving the public schools, we find that the variance in perceptions of the quality of schooling received by all students remains unchanged.

Why does this happen? The model predicts that two groups of families will choose to use vouchers, whether or not they are targeted to a specific community. The first group are those who live in poor communities, have high ability children, and moderate to moderately high incomes. The second group includes moderate to high-income households from other communities who relocate to desirable neighborhoods within poorer communities in order to send their children to private schools. The latter group makes up the majority of new private school attendees, while the former group is less than one-third of those who switch to private schools. This is largely attributed to the relationship between housing location and school choice we discussed previously. When families purchase or rent houses in high quality public school districts, they implicitly pay a premium for those schools that the market has integrated into housing prices. Once voucher programs in lower-income districts provide families with opportunities to send their children to better schools without forcing them to pay the high costs of housing associated with living in a good public school district, families migrate from high-income, high-quality public school districts to lower-income, voucher districts.[54] These migrations cause property values and average incomes in low-income communities to rise and those in high-income communities to fall.

The migration-induced increase in property values in poor districts, combined with smaller public school populations, could translate into higher per-pupil spending in public schools.[55] However, because a relatively small fraction of school funding in New York comes from local sources, this effect is outweighed by emerging political forces attributable to the higher numbers of private school parents who are assumed not to readily support public schools at the ballot box. Public school spending in the poor districts therefore shows a tendency to decline, although not by much as long as vouchers are below $3,000. Per-pupil spending in other districts also declines as families who previously sent their children to public schools move in order to send their children to private schools and are replaced by new households that place less value on public school spending. The decline in public school

TABLE 2

Variances Under Different Assumptions*

First Line - $2,500 Full or Community Targeted Voucher

[Second Line - $5,000 Community Targeted Voucher]

	Calibrated Base Model (4.2)		Curriculum Targeting (5.1)		Competition & Bureaucracy (5.2)		Info/ Monitor (5.3)
	No Voucher	Base Model	Private Schools	All Schools	W/in Dist.	W/in & Across Dist.	Parental Input
Across Public School Students							
Per Pupil ($)	1.0	0.97 *[0.88]*	0.96 *[0.61]*	0.97 *[0.70]*	0.97 *[0.87]*	0.98 *[0.92]*	0.96 *[0.85]*
Household Income ($)	1.0	0.91 *[0.90]*	0.89 *[0.68]*	0.92 *[0.73]*	0.93 *[0.89]*	0.95 *[0.91]*	0.93 *[0.92]*
Child Ability	1.0	0.72 *[0.67]*	0.78 *[0.56]*	0.71 *[0.53]*	0.73 *[0.70]*	0.74 *[0.70]*	0.75 *[0.70]*
School Quality**	1.0	0.88 *[0.81]*	0.94 *[0.65]*	0.69 *[0.51]*	0.72 *[0.64]*	0.91 *[0.84]*	0.71 *[0.67]*
*Across all Students****							
Per Pupil ($)	1.0	0.94 *[0.90]*	0.93 *[0.81]*	0.94 *[0.83]*	0.94 *[0.88]*	0.95 *[0.89]*	0.94 *[0.91]*
Household Income ($)	1.0	1.32 *[1.49]*	1.43 *[1.53]*	1.31 *[1.47]*	1.33 *[1.47]*	1.24 *[1.35]*	1.38 *[1.50]*
Child Ability	1.0	1.18 *[1.23]*	1.24 *[1.41]*	1.19 *[1.31]*	1.17 *[1.20]*	1.15 *[1.17]*	1.21 *[1.26]*
School Quality**	1.0	0.99 *[0.96]*	1.05 *[1.06]*	0.87 *[0.86]*	0.82 *[0.78]*	0.91 *[0.85]*	0.88 *[0.86]*
Across School Districts							
Household Income	1.0	0.71 *[0.65]*	0.67 *[0.60]*	0.70 *[0.62]*	0.71 *[0.64]*	0.74 *[0.69]*	0.68 *[0.62]*
Property Values	1.0	0.61 *[0.55]*	0.56 *[0.49]*	0.61 *[0.53]*	0.59 *[0.51]*	0.64 *[0.58]*	0.59 *[0.52]*

* Note that, in order to ease interpretation, these variance values are scaled in various ways to equal one for the base case of no vouchers. Our emphasis here is therefore not on absolute but rather on relative magnitudes across columns.

** School quality arises endogenously from the combination of per pupil spending, per pupil household income, and average child ability in the school.

*** Note that "all students" here refers to all students that are initially in the public school system before the introduction of vouchers.

spending reported in Table 1 does not occur mainly in poorer districts where private schools open; rather it is centered in wealthier districts and is driven by family migrations. As a result, these migrations diminish variances in per-pupil public school spending.

Another result is that residential diversity, measured by variances in property values and household incomes within school districts, increases as the city becomes more economically integrated. The private schools that emerge are more differentiated because they offer various types of educational options. We assume that they are able to achieve this differentiation and to attract students who are dissatisfied with the public system through their admissions standards and, to a lesser extent, tuition levels. High peer quality households are the first to take advantage of this differentiation.

One might suspect that this private school "skimming" causes inequality of educational opportunity to increase. This does not seem to be the case. In particular, perceptions of public school inequality decrease since perceived public school quality falls more in high-income districts than in low-income districts, while the overall variance in perceptions of educational quality among public and private students remains constant. This is caused by the large variance in public school quality prior to the introduction of vouchers and to the declining variance in per-pupil spending across all students that occurs when families take advantage of new educational opportunities. At the same time, however, the variance in average child abilities and average socioeconomic status increases among schools.

One could argue that vouchers produce migration patterns that cause a decline in residential stratification and an increase in school stratification, and therefore the overall variance in perceived school quality among all students who currently (pre-vouchers) attend public schools does not change. From the perspective of courts attempting to decrease variances in educational opportunities, this base model suggests that at the very least vouchers do not contradict that policy goal.[56] Vouchers increase access to quality schools for residents of districts that are deemed inadequate in two distinct ways. First, some households are able to choose private schools under a district targeted voucher policy. Second, a significant fraction of other households are able to access better public schools in other districts because housing becomes more affordable.

Finally, since we have cited empirical evidence to support our modeling assumptions regarding the importance of perceptions of public school quality in housing location decisions, we should note that the limited evidence on private school formation resulting from school finance policy changes also supports the predictions of this model. In particular, after dramatic changes to school financing in California during the late 1970s, changes that benefited low- and hurt high-income districts in spending terms, the number of private schools doubled and new schools emerged disproportionately in poor districts.[57] Many of these private schools may therefore have appeared in areas such as depressed inner cities and may have played an important role in keeping families from fleeing those areas.

4.22. Voucher Targeting

Thus far we have focused on full- and community-targeted voucher systems and have noted that at low voucher levels the outcomes for both programs are similar. While we do not report simulation results for income-targeted vouchers, we briefly can point out the differences between the two approaches.[58]

Since many of the new private schools emerging under full- or community-targeted vouchers primarily serve middle- and high-middle- income families willing to move for better schools, much of their impact vanishes when they are targeted to low-income families.

Private schools emerge only in the poor districts, but at much slower rates and only at higher levels of voucher support. Targeting methods based only on family income eligibility protect wealthier districts from migration-induced competition and limit the positive impact of vouchers on poor school districts. Thus, while they allow some residents of poor districts to access private schools, they maintain high housing and rental prices in good public school districts and therefore continue to exclude lower-income families from accessing better public schools. It is unclear how such income-targeted vouchers would meet the constitutional requirement of aiding only students in those districts where public schools are inadequate. Since community-targeted vouchers accomplish that goal by restricting eligibility to families whose public schools do not serve them properly, they represent a better remedy to inadequate public schooling than do income-targeted vouchers, from both an economic and a legal perspective.

4.23. An Unconventional Case for Vouchers

Our results indicate that vouchers are an attractive remedy in education adequacy suits because they address at least three of the factors giving rise to current inequalities in public education. By enabling parents to choose private schools for their children, vouchers provide the means for them to escape the political peculiarities of systems that allocate more per-pupil resources to the well off. By removing education-related incentives for high-income households to separate themselves from poor neighborhoods, vouchers introduce a desegregating force into society. Finally, by reducing housing prices in high quality public school districts and raising them in low quality districts, vouchers help more low-income families afford to live in areas with better public schools. Even in a framework that does not explicitly incorporate the benefits expected from increased competition, the de-coupling of location from school choice decisions that vouchers achieve has important implications for the root causes of school financing inequities that courts seek to address.

While the results from our simulations may be viewed as desirable from many perspectives, we have thus far offered little evidence that vouchers significantly lessen the overall differences in school adequacy or raise overall social value. Rather we have only considered a model that "stacks the deck" against vouchers by assuming that:

1) Competition from new private schools does not cause public schools to become more efficient;
2) There is no improvement in educational quality from the specialization in educational methods that many people believe would occur when more private schools are created;
3) No educational benefit is derived from increased parental involvement in schools, and
4) Private schools severely discriminate in terms of peer quality.

Yet, even in this "worst case scenario" we find that vouchers do not exacerbate the current inequities in the system and that they expand opportunities for families trapped in districts with inadequate schools. While our model predicts that perceptions of public school quality might decline as private schools "skim" away the best public school students, that decline is spread across all districts and is offset by perceptions of increased educational quality among parents whose children now attend private schools.[59]

Our work indicates that, if current inequities and the factors leading to them are appropriately modeled, vouchers produce *at worst* relatively neutral results. Given this "worst case scenario," there is reason to be optimistic about the potential for vouchers to improve educational outcomes and raise social value when more realistic assumptions are incorporated into the model. We now turn to such an expansion of the framework.

5. Deviations from the Base Model

Voucher proponents have long contended that introducing competition into the elementary and secondary education market would improve educational quality in both private and public schools. To evaluate how increased competition would impact educational quality, we incorporate into the model three hypothesized changes that vouchers might encourage: pedagogical specialization, increased efficiency, and increased parental involvement.

There is strong support that each will improve educational quality. For example, children have different strengths and weaknesses and therefore might not benefit in the same ways from a single school. Under vouchers, the missions, teaching philosophies, and methods of schools might become more specialized to better match children's needs as public and private school populations individually become more homogeneous. If institutions respond accordingly, education quality would improve as the differences in abilities within classrooms narrow.

Similarly, public school bureaucracies, often dominated by interests other than delivering a good education, might have agendas that are not perfectly aligned with parental goals. As a result, it is plausible that the marginal product of educational spending within public schools will rise as competition increases, and as bureaucracies have to compete for students who are no longer held captive by local housing markets.

Finally, the extent to which parents attempt to influence their children's education presumably depends on how well-informed they are, and their abilities to translate private actions into results. These factors, however, probably depend on institutional features like school size and operational environment. Smaller and more competitive schools might provide for greater parental involvement and effectiveness.

We exclude these conditions from the base model in part because we want to establish a "worst case benchmark" under the assumptions more commonly used in the scholarly literature and also because it is more problematic to use current data to calibrate each of these optional factors. Wide disagreement persists about the benefits of including children with different talents in the same classroom, with some arguing for diversity and others for more targeted "tracking."[60] Similarly, while we have strong evidence that public school bureaucracies hinder productivity, we often find ourselves guessing about how to combat their inefficiencies.[61] Finally, there is little empirical research on the role of parental involvement in producing good schools.[62]

Nonetheless, there is some evidence that each of these variables improves school quality, and we find it worthwhile to investigate how these factors influence the results we reported in Section 4. We therefore introduce what we consider to be "modest levels" of these influences, and we report them in Tables 1 and 2, again for community-targeted vouchers of $2,500 and $5,000.

5.1. Curriculum Design and Benefits from Specialization

Because we assume in the base model that peer achievement partially determines parents' perceptions of school quality, we similarly assume that school specialization developed to serve narrow bands of abilities will benefit higher-ability at the expense of lower-ability children.[63] These assumptions hold in schools where the curriculum is the same for all students. However, it is unreasonable to expect curricula and teaching styles to remain universally similar once schools become specialized. The more likely scenario is that schools, especially in the later grades, will compete against each other by attempting to differentiate themselves as "science schools" or "foreign language schools," and the curriculum in each will reflect its mission as well as student ability levels. In addition, if student abilities within a classroom are more homogeneous, teachers will be able to better adjust their teaching styles to match student needs. This is particularly true for earlier grades where private schools have successfully developed different teaching philosophies for different sets of students (e.g., Catholic and Montessori schools).

In these types of environments, however, it no longer makes sense to assume that low ability students will benefit from the presence of higher ability students in the same classrooms. Rather, if greater differentiation across schools takes place, it may be more reasonable to model schools to serve students who are similar. Therefore, we now consider the implications of such school specialization on our simulation results, and we report these in the third and fourth columns of Tables 1 and 2. Column three assumes that only private schools target their curriculum, while column four assumes similar targeting in public schools.[64]

In each case, vouchers still give rise to migration effects similar to those reported in the previous section, but implications for improvements in educational opportunities now differ. If only private schools are assumed to be responsive in reforming their curricula, the model predicts that the introduction of vouchers in the amount of $2,500 will increase the number of households choosing private schools, from 14 to 19 percent. Within the public school system, perceptions of schools delivering adequate academic results decline as more "high peer quality" children leave. Since private schools are now more effective, however, overall perceptions of school quality rise despite the decrease in the perceived quality of the public system, as does the variance in perceptions of school quality across all students. When we assume that public schools also target their curricula, greater homogeneity in the school population allows resources to be more precisely directed to better-defined student needs, particularly in the poorest school districts. Public schools become more competitive, private school attendance rises less sharply, and the variances in perceived school quality decline. Therefore, greater student-ability homogeneity in both public and private schools, encouraged by voucher systems, may have positive efficiency and equity implications.

5.2. Competitive Forces and Bureaucracy

Assuming student populations remain fixed, the argument that greater homogeneity will allow for better *matching* of resources with abilities differs from the more common argument that private school competition contributes to more efficient use of resources in public schools. Isolation from competition often gives rise to inefficiencies from unionization and bureaucratization. While we lack conclusive proof, limited evidence suggests that public schools are inefficient,[65] that bureaucratic and union dominated governance structures increase that inefficiency,[66] and that competition improves school performance, even in the absence of

vouchers.[67] These data suggest that increased competition from private schools will encourage public schools to make more efficient use of their resources.

Therefore, we add to the original model a new parameter specifying that public schools become more efficient as competition increases, in terms of the numbers of children who attend private schools. The empirical literature offers little guidance as to the value this parameter should take. We choose to include only a modest competitive benefit.

Given the emphasis that we have placed on the potential for voucher induced mobility, it seems plausible that these competitive effects will spill over into other school districts. However, they are likely to be less pronounced in districts that do not actually lose student population, but only acquire a different mix of students. In columns five and six in Tables 1 and 2, we report results for competitive effects that both do and do not spill over.

If the effects are only local, perceived public school quality continues to decline modestly in the wealthier districts as high peer quality families move to good neighborhoods within poorer districts. However, perceptions of quality rise in the poor districts despite the exit of high peer quality families, and the absence of curriculum changes we discussed in the previous section. Public school students from poorer communities exit the system more slowly, causing a larger number of private school students to be from families that had previously chosen public schools in other districts. This competitive effect causes the equity outlook for vouchers to improve since the variance in perceived quality among public school students, as well as among all students, declines. If, on the other hand, we assume that competitive effects spill over into other districts where new private schools are not created as rapidly, overall perceptions of public school quality improve even more, and the variance in perceived school quality does not decline as much. Public schools in middle- and high-wealth districts also improve the marginal productivity of their resources.

5.3. Information, Decentralization and School Size

Finally, as we noted earlier, parents significantly impact school quality. Benefits from their involvement can be most effectively realized when, as a group within a school, they are more homogeneous, sharing similar interests and information, and are relatively small in number so that each can contribute and so that collectively their coordination costs are lower. The first of these benefits is similar to the curriculum targeting effect modeled in Section 5.1, where the homogeneity of students contributed to improvements in perceived school quality. Therefore we need not explain it further. But the second is qualitatively different. Again the evidence on the relationship between the size of a school or school district and the level of performance is sketchy. Anecdotal evidence from California suggests that centralization of school finance and control has caused declines in parental involvement in many districts. The dramatic drop in school quality observed in California over the past two decades may be partially caused by this effect.[68]

The final column in Tables 1 and 2 shows our results under the assumption that the influence of parents increases as school size declines.[69] Since private schools are typically smaller than public schools, this condition increases the rate of private school emergence. However, because the public schools in poor districts lose students first (both to private schools and to schools in other districts), their perceived quality improves. Overall perceptions of public school quality rise and the variance in perceptions across districts falls. Furthermore, more private

school students are from families who have migrated to the poorer districts. Consequently there are fewer incentives for households attending public schools to leave. Finally, as private school voucher values increase beyond those reported in Tables 1 and 2, private school emergence slows because smaller public schools are increasingly effective. Again, both the efficiency and equity properties of vouchers are strengthened when compared to the results reported for the base model.

6. Conclusion

Until recently school finance reform and school choice policies have been viewed separately, with the former arising primarily in the context of court challenges and the latter conducted in small public and private experiments. We acknowledge that in a perfect world court decisions may not be the appropriate vehicle for articulating or implementing either policy. However, given the already substantial involvement of the courts in the education reform debate, we argue that it may be helpful for courts to find ways to link school finance and school choice proposals in their judicial remedies. We propose that judicial remedies resulting from successful challenges to the adequacy of school finance systems direct increased educational funding in the form of vouchers to the families of those schoolchildren who are served by inadequate schools rather than to the schools that have failed to deliver adequate educational services. Our argument rests on the assumption that such "choice" proposals are likely to improve equity of educational opportunities and raise social net value.

We tested the efficacy of these assumptions and the likely equity and efficiency implications of vouchers in the context of an economic model that is consistent with current facts based on existing inequities and calibrated to available data. Under realistic assumptions our model suggests that full- or community- targeted voucher initiatives in a system like New York's would potentially have large positive impacts for both the equity and efficiency of the entire educational system. Under the worst case scenario, our base model, only minor impacts on the overall level and distribution of educational opportunities would occur. Note, however, just how pessimistic that model is: it includes none of the positive features generally predicted by proponents of vouchers, while incorporating an unflattering representation of private schools as skimming institutions aimed primarily at those with higher incomes and abilities. With the inclusion of any one positive feature, full or community targeted voucher systems begin to have favorable implications for both efficiency and equity. Overall, the economic case for expanding choice in places like New York appears favorable and consistent with emerging judicial standards.

Endnotes

[1] See Michael Heise, *Equal Educational Opportunity, Hollow Victories, and the Demise of School Finance Equity Theory: An Empirical Perspective and Alternative Explanation*, 32 Georgia Law Review 543 (1998), for a discussion and evidence of the efficacy of state supreme court decisions in the school finance area.

[2] The landmark Kentucky decision, *Rose v. Council for a Better Education*, 790 S.W.2d 186 (KY. 1989), helped usher the transition from equity to adequacy-based school-finance court decisions. It is typical of adequacy-based court decisions in that it sought—and succeeded—to increase educational spending in Kentucky. See, for example, Kern Alexander, *The Common School Ideal and the Limits of Legislative Authority: The Kentucky Case*, 28 Harvard Journal on Legislation 341 (1991).

[3] Other countries, like Chile, have more experience with vouchers. The many other differences between Chile and the U.S., however, make direct inferences from this experience problematic. See, for example, Martin Carnoy and Patrick McEwan "The Effects of Competition from Private Schools on Achievement: A Longitudinal Analysis of Chilean Schools" (Stanford University Working Paper, 1997).

[4] For one example of a collection of differing viewpoints on issues relating to school choice policy, see *School Choice: Examining the Evidence* (Edith Rasell & Richard Rothstein, eds., Economic Policy Institute, 1993).

[5] See Paul T. Hill, "Private Vouchers in New York City: The Student-Sponsor Partnership Program," in *Private Vouchers*, 120-35 (Terry M. Moe, ed., Hoover Institution, 1995), for a description of one of New York City's largest privately funded school-choice programs.

[6] See, for example, Thomas Nechyba and Robert P. Strauss, *Community Choice and Local Public Services: A Discrete Choice Approach*, 28 Regional Science and Urban Economics 51 (1998), and references therein.

[7] See, for example, Dennis Epple and Richard Romano, *Competition Between Private and Public Schools, Vouchers, and Peer-Group Effects*, 88 American Economic Review 33 (1998); and Charles Manski, *Educational Choice (Vouchers) and Social Mobility*, 11 Economics of Education Review 351 (1992).

[8] See, for example, William E. Thro, *Judicial Analysis During the Third Wave of School Finance Litigation: The Massachusetts Decision as a Model*, 35 Boston College Law Review 579 (1994); and Michael Heise, *State Constitutions, School Finance Litigation, and the 'Third Wave': From Equity to Adequacy*, 68 Temple Law Review 1151 (1995).

[9] 487 P.2d 1241 (Cal. 1971), *cert. denied*, 432 U.S. 907 (1977).

[10] 411 U.S. 1 (1973).

[11] 303 A.2d 273 (N.J. 1973), *cert. denied*, 414 U.S. 976 (1977).

[12] *Rose v. Council for Better Education, Inc.*, 790 S.W.2d 186 (KY. 1989) is frequently pointed to as the decision signaling the emergence of the third wave.

[13] See Michael Heise, *Equal Educational Opportunity, Hollow Victories, and the Demise of School Finance Equity Theory: An Empirical Perspective and Alternative Explanation*, 32 Georgia Law Review 543 (1998), for a brief description.

[14] One result is the potential for what some commentators refer to as "municipal overburden." See Leon D. Lazer, *New York Public School Financing Litigation*, 14 Touro Law Review 675, 677 n.13 (1998).

[15] *Id.* at 678, n. 17.

[16] N.Y. Const. art. XI, § 1. The Clause reads, in pertinent part, "The legislature shall provide for the maintenance and support of a system of free common-schools, wherein all the children of this state may be educated."

[17] See, for example, William E. Thro, *Judicial Analysis During the Third Wave of School Finance Litigation: The Massachusetts Decision as a Model*, 35 Boston College Law Review 579, 605 (1994), for a description of the four categories (or tiers) of state education clauses.

[18] *Board of Education v. Nyquist*, 439 N.E.2d 359 (NY. 1982), began in 1974. *Id.* at 361.

[19] Leon D. Lazer, *New York Public School Financing Litigation*, 14 TOURO LAW REVIEW 675, 682 (1998).

[20] *Board of Education v. Nyquist*, 439 N.E.2d 359 (NY.1982).

[21] *Id.* at 369.

[22] *Reform Educational Financing Inequities Today v. Cuomo*, 631 N.Y.S.2d 551, 655 N.E.2d 647 (NY. 1995) [hereinafter "*REFIT*"].

[23] *Id.*

[24] *Campaign for Fiscal Equity v. State of New York*, 655 N.E.2d 661 (NY. 1995) [hereinafter "*CFE*"].

[25] *Id.*

[26] See, for example, Mark Schneider & Paul Teske, "Public School Choice: A Status Report," in *City Schools: Lessons From New York* (Diane Ravitch & Joseph Viteritti, eds., Johns Hopkins University Press, 1999).

[27] *Cf.* endnote 5.

[28] See Nina H. Shokraii and Sarah E. Youssef, *School Choice Programs: What's Happening in the States* 106-11 (Heritage Foundation, 1998).

[29] In 1989, for example, the state's then Education Commissioner proposed a pilot program of publicly funded vouchers, but the proposal quickly died at the behest of Governor Mario Cuomo and other public officials. See Sol Stern, *The School Reform That Dares Not Speak its Name*, CITY JOURNAL (Winter 1996) at 28.

[30] The school finance movement's turn in 1989 toward a theoretical mooring in adequacy rather than equity partly fueled this broadening of the definition of educational opportunity. See Peter Enrich, *Leaving Equality Behind: New Directions in School Finance Reform*, 84 VANDERBILT LAW REVIEW 100 (1995); and Michael Heise, *State Constitutions, School Finance Litigation, and the 'Third Wave': From Equity to Adequacy*, 68 TEMPLE LAW REVIEW 1151 (1995).

[31] See Michael Heise, *Equal Educational Opportunity and Constitutional Theory: Preliminary Thoughts on the Role of School Choice and the Autonomy Principle*, 14 JOURNAL OF LAW & POLITICS 412 (1998) for more comprehensive development of this point.

[32] See Greg D. Andres, *Private School Voucher Remedies in Education Cases*, 62 UNIVERSITY OF CHICAGO LAW REVIEW 795 (1995), for a brief discussion of two cases that advance a similar argument. See also Dominick Cirelli, Jr., *Utilizing School Voucher Programs to Remedy School Financing Problems*, 30 AKRON LAW REVIEW 469 (1997); and Michael Heise, *Equal Educational Opportunity and Constitutional Theory: Preliminary Thoughts on the Role of School Choice and the Autonomy Principle*, 14 JOURNAL OF LAW & POLITICS, 412 (1998).

[33] For a general discussion, see Nathan Glazer, *Towards an Imperial Judiciary?*, 42 PUBLIC INTEREST 104 (1975); and Michael Heise, *The Courts vs. Educational Standards*, 120 PUBLIC INTEREST 55 (1995).

[34] See Patrick Bayer, "The Role of Family Characteristics in Determining the Demand for School Quality" (Stanford University Working Paper, 1998) for empirical evidence suggesting that low-income households are systematically priced out of high-school-quality districts.

[35] See Eric Hanushek, *The Economics of Schooling: Production and Efficiency in Public Schools*, 24 JOURNAL OF ECONOMIC LITERATURE 1147 (1986), who provides an extensive review of this literature. For a recent debate on the marginal product of additional school resources, see Eric Hanushek, *Conclusions and Controversies about the Effectiveness of School Resources*, 4 FEDERAL RESERVE BOARD OF NY POLICY REVIEW 11(1998); and Alan Krueger, *Reassessing the View that American Schools are Broken*, 4 FEDERAL RESERVE BOARD OF NY POLICY REVIEW 29 (1998). Also, see Thomas Nechyba, "Public School Finance in a General Equilibrium Tiebout World: Equalization Programs, Peer Effects and Private School Vouchers" (National Bureau of Economic Research Working Paper No. 5642, 1996) for illustrations of how state spending equalization is unlikely to produce equality in school quality. To acknowledge that this point is deeply disputed is to acknowledge the obvious. For other perspectives see Larry V. Hedges et al., *Does Money Matter? A Meta-Analysis of Studies of the Effects of Differential School Inputs on Student Outcomes*, 23 EDUCATIONAL RESEARCHER 5 (1994); and Rob Greenwald et al., *The Effect of School Resources on Student Achievement*, 66 REVIEW OF EDUCATIONAL RESEARCH 361 (1996).

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[36] The literature on peer effects within classrooms is extensive. For examples, further references, and problems with this literature, see Charles Manski, *Identification of Endogenous Social Effects*, 60 REVIEW OF ECONOMIC STUDIES 531 (1993); William Evans and Robert Schwab, *Measuring Peer Group Effects: A Study of Teenage Behavior*, 100 JOURNAL OF POLITICAL ECONOMY 968 (1992); C. Link and J. Mulligan, *Classmates' Effects on Black Student Achievement in Public School Classrooms*, 10 ECONOMICS OF EDUCATION REVIEW 297 (1991); Richard Arnott and J. Rowse, *Peer Group Effects and Educational Attainment*, 32 JOURNAL OF PUBLIC ECONOMICS 287 (1987); Vernon Henderson, Peter Mieszkowski and Y. Sauvageau, *Peer Group Effects and Educational Production Functions*, 10 JOURNAL OF PUBLIC ECONOMICS 97 (1978); and A. Summers and B. Wolfe, *Do Schools Make a Difference*, 67 AMERICAN ECONOMIC REVIEW 639 (1977).

[37] See Robert McMillan, "Parental Involvement and Competition: An Empirical Analysis of the Determinants of Public School Quality" (Stanford University Working Paper, 1998).

[38] See Gary Solon, *Intergenerational Income Mobility in the United States*, 82 AMERICAN ECONOMIC REVIEW 393 (1992); and David Zimmerman, *Regression Toward Mediocrity in Economic Stature*, 82 AMERICAN ECONOMIC REVIEW 409 (1992).

[39] See Table 4 in Thomas Nechyba, *School Finance Induced Migration Patterns: The Impact of Private School Vouchers*, 1 JOURNAL OF PUBLIC ECONOMIC THEORY 5 (1999).

[40] In addition, the rise of a large "education establishment" dominated by teachers' unions may cause overall inefficiency in public schools. This, however, contributes less to differences between schools and more to general efficiency problems across the school system. See, for example, William Evers, *What's Gone Wrong in America's Classrooms*, (Hoover Institution Press, 1997). We will take up some related issues in Section 5 of the paper.

[41] Courts have attempted to force communities to provide low-income housing (see, for example, *Southern Burlington County NAACP v Township of Mt. Laurel*, 67 N.J. 151 #336 A.2d, appeal dismissed, 423 U.S. 808 (1975)), but these efforts are likely to meet with limited success, especially in well developed areas in which housing stocks are difficult to alter (such as in New York City).

[42] A detailed theoretical analysis of some of the properties of our model can be found in Thomas Nechyba, *Existence of Equilibrium and Stratification in Local and Hierarchical Public Goods Economies with Property Taxes and Voting*, 10 ECONOMIC THEORY 277 (1997); Thomas Nechyba, *Local Property and State Income Taxes: The Role of Interjurisdictional Competition and Collusion*, 105 JOURNAL OF POLITICAL ECONOMY 351 (1997); Thomas Nechyba, *A Computable General Equilibrium Model of Intergovernmental Aid*, 62 JOURNAL OF PUBLIC ECONOMICS 363 (1996); Thomas Nechyba, "Public School Finance and Vouchers in a General Equilibrium Tiebout World," in *Proceedings of the 90th Annual Conference of the National Tax Association* (National Tax Association, 1999); Thomas Nechyba, *School Finance Induced Migration Patterns: The Impact of Private School Vouchers*, 1 JOURNAL OF PUBLIC ECONOMIC THEORY 5 (1999); and Thomas Nechyba, *Mobility, Targeting and Private School Vouchers*, AMERICAN ECONOMIC REVIEW (forthcoming).

[43] We should note here that "districts" in the model are assumed to set their own funding levels through a political process by which the median voter's most preferred spending level is implemented within the district. While this is a good representation of how spending is often determined in many districts in New York State, it may not be representative of the process in New York City where education funding across the city is determined by a central authority. However, there is a political process at work within the city government that allocates resources, and strong prior evidence suggests that actual per-pupil funding within a school district in New York City is dependent on the political power of that district, which in turn depends on local constituent preferences (see, for example, Robert Inman and Daniel Rubinfeld, *The Judicial Pursuit of Local Fiscal Equity*, 92 HARVARD LAW REVIEW 1662 (1979) for a description of this process). Thus, in the absence of a model of how New York City government operates, we continue using the local median voter model as an approximation of that process.

[44] Note that local taxes are assumed to be on property, though New Yorkers also pay a city income tax. A replication of the simulations using income taxes in place of property taxes, however, yields qualitatively similar results.

[45] Throughout this model we assume that parents have to send their children to the school in the jurisdiction (within the city) in which they reside. While New York City's official policy allows residents to send their children to public schools anywhere in the city, we have argued that, practically, this is unrealistic since better public schools tend to claim capacity constraints that severely limit the ability of parents outside their jurisdiction to actually choose these schools.

[46] Henceforth, we will use the terms "district," "jurisdiction," and "community" interchangeably. Data on local incomes and house prices as well as public school features can be found in National Center for Education Statistics, *School District*

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Data Book n 1.0 (US Department of Education, 1995); and Bureau of the Census, *1990 Census of Population and Housing* (The Bureau of the Census, 1992). Information on specific spending levels within public schools in particular jurisdictions of New York City, however, are difficult to obtain because of the unified nature of New York City's school financing. Therefore, we have used data from other districts in New York State to approximate the likely levels of public spending within jurisdictions. These data are readily available in the sources cited above.

[47] Here we use data on school districts outside New York City where data on spending per pupil is more readily available. Thus, the preference parameter for school spending is set using New York State data.

[48] This empirical correlation has been shown to lie between 0 and 0.4 (see Gary Solon, *Intergenerational Income Mobility in the United States*, 82 American Economic Review 393 (1992); and David Zimmerman, *Regression Toward Mediocrity in Economic Stature*, 82 American Economic Review 409 (1992).

[49] These data are somewhat difficult to obtain for the urban district of New York City, but we use data from districts elsewhere in the New York area to infer the spending relationships more precisely.

[50] The technical details of this calibration are reported elsewhere, and we only try to give a broad sense of how this is accomplished. See footnote 42.

[51] See Patrick Bayer, "The Role of Family Characteristics in Determining the Demand for School Quality" (Stanford University Working Paper, 1998).

[52] See Thomas Nechyba, *Mobility, Targeting and Private School Vouchers*, American Economic Review (forthcoming).

[53] See Eric Hanushek and John Quigley, *An Explicit Model of Intrametropolitan Mobility*, 94 Land Economics 411 (1978); and Yannis Ioannides, *Residential Mobility and Housing Tenure Choice*, 17 Regional Science and Urban Economics 265 (1987).

[54] Given that most households (in New York) live close to different public school districts and not immediately next to their jobs, job locations are unlikely to play an important role in this decision. In fact, the urban economics literature (see, for example, Jan Brueckner, *Spatial Mismatch: An Equilibrium Analysis*, 27 Regional Science and Urban Economics 693 (1997), and references therein) has long been puzzled by the relative non-conformity of job and residential locations within urban areas, much of which can probably be explained by school district choices.

[55] The public school population in poor districts declines for two reasons: first, some students previously attending these schools switch to private schools, and second, some students leave the public school to attend public schools in other districts as they are replaced in their houses by new residents from other districts who choose private schools. The second effect arises because the model (quite realistically, in the case of New York City) assumes that total residential capacity within each district is fixed. Elsewhere (see Thomas Nechyba, *School Finance Induced Migration Patterns: The Case of Private School Vouchers*, 1 Journal of Public Economic Theory 5 (1999) we demonstrate that in a purely locally financed system, the model predicts that spending per pupil will rise in districts that give rise to private schools because the inflow of new residents who send their children to private schools acts like a matching grant to the community.

[56] These results are in stark contrast to results our model gives in the absence of mobility by households. While such lack of mobility causes vouchers to give rise to significantly fewer private schools, these private schools again emerge in the poorest districts. Now, however, there is little benefit for the remaining residents of the poor districts. Ignoring general equilibrium mobility effects therefore often causes many researchers to overstate adverse equity implications of voucher policies.

[57] See Thomas Downes and Shane Greenstein, "Entry into the School Market: How is the Behavior of Private Suppliers Influenced by Public Sector Decisions?" (Tufts University Working Paper, 1997).

[58] These issues are explored in detail in Thomas Nechyba, *Mobility, Targeting and Private School Vouchers*, American Economic Review (forthcoming).

[59] Further, note that the migration effects central to our analysis may be understated because of our implicit assumption that all other characteristics of housing and neighborhoods remain the same after migrations occur. As school districts become residentially more integrated, one would expect increases in amenity levels and house qualities in poor districts, and decreases in wealthy districts, and this convergence would likely fuel additional migrations.

[60] A recent illustration of this involves the confusing and confused debate over bilingual education in California. For a sense of the confusion in the current academic literature, see the references on peer effects cited previously. Also see Thomas Nechyba, "A New Look at Peer Effects: Implications for School Design and School Choice" (Stanford University Working Paper, 1998) for a detailed analysis of the debate on peer effects.

[61] See J. Chubb and Terry Moe, "Politics, Markets and America's Schools," (Brookings Institute, 1990), for a thorough discussion on this, and see Caroline Hoxby, *How Teachers' Unions Affect Education Production*, 111 QUARTERLY JOURNAL OF ECONOMICS 671 (1996) for empirical evidence on the impact of unionization.

[62] See Robert McMillan, "Parental Involvement and Competition: An Empirical Analysis of the Determinants of Public School Quality," (Stanford University Working Paper, 1998). McMillan finds strong empirical evidence supporting the notion that parental monitoring of schools plays a central role in generating school quality. See also Caroline Hoxby, "When Parents Can Choose, What Do They Choose" (Harvard University Working Paper, 1998).

[63] As pointed out in a previous footnote, much disagreement exists regarding the empirical nature of peer effects. Some of this disagreement may well be due to the fact that different studies utilize quite different data sets, and peer effects may well depend on the underlying institutional structure of the systems in which these peer effects are analyzed.

[64] To be slightly more precise, we alter in these simulations the nature of the impact of peer quality by assuming that a combination of the average peer quality and the variance of peer quality within schools matters for school quality. Thus, school quality in these simulations is assumed to be positively correlated with average peer quality (as before) *and* negatively correlated with the variance. We interpret the degree to which the variance enters school quality as the degree of targeting of curricula. In the simulations here, we assume that two thirds of school quality is determined through the variance channel. Furthermore, for ease of comparison, we scale the school quality output function in such a way as to produce the same level of school quality in the public system before vouchers as we reported in the no-voucher column of the table.

[65] See, for example, Eric Hanushek, *The Economics of Schooling: Production and Efficiency in Public Schools*, 24 JOURNAL OF ECONOMIC LITERATURE 1147 (1986).

[66] See, for example, J. Chubb and Terry Moe, *Politics, Markets and America's Schools* (Washington, DC: Brookings Institution (1990); and Caroline Hoxby, "How Teachers' Unions Affect Education Production," 111 QUARTERLY JOURNAL OF ECONOMICS 671 (1996).

[67] See Caroline Hoxby, "Do Private Schools Provide Competition for Public Schools?" (National Bureau of Economic Research Working Paper No. 4978, 1994). Also, for different interpretations of the data regarding the relative performance of private schools and public schools, see Derek Neal, *The Effect of Catholic Secondary Schooling on Educational Achievement*, 15 JOURNAL OF LABOR ECONOMICS 98 (1997); and David Figlio and Joe Stone, "School Choice and Student Performance: Are Private Schools Really Better?" (University of Oregon Working Paper, 1997). Finally, positive competitive effects are not without controversy as some researchers have found a negative competitive effect (that may, however, be a skimming effect rather than a negative competitive effect): see Robert McMillan, "Parental Involvement and Competition: An Empirical Analysis of the Determinants of Public School Quality" (Stanford University Working Paper, 1998).

[68] Despite the lack of empirical investigation, however, the relationship between size and parental activity does represent an effect that is quite familiar to economists in other contexts and relates strongly to the literature on charitable contributions. In particular, just as with charitable financial contributions, we can think of parental involvement in schools as charitable time contributions aimed at improving school quality. Since parents may take into account only the impact of their efforts on their own child, however, they will tend to ignore the social benefits of their activity and free ride on the efforts of other parents. The smaller the school, however, the greater is the fraction of the benefit that accrues directly to those engaging in effort and the smaller is the free rider problem. In the extreme, we can think of "single child" schools in which the parents capture all of the benefits of their efforts. This extreme example, of course, ignores increasing returns to scale effects that are empirically relevant for very small schools but that seem to be rather absent once a school reaches a few hundred students (see, for example, J. Dewey, Thomas Husted and Lawrence Kenny, "Are Educational Inputs Irrelevant?: A Reexamination of the Evidence" (University of Florida Working Paper, 1995).

[69] Technically, we accomplish this by raising the marginal product of financial resources within school size declines. Again, in order to make comparisons meaningful, we scale the school quality levels in the absence of vouchers to be identical to those reported in column 1 for the no-voucher case.

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